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UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Nakhla, George
Appl. No. : 10/784,890
Filed : 2/24/2004
Title : LIQUID-SOLID CIRCULATING FLUIDIZED BED WASTE WATER
TREATMENT SYSTEM FOR SIMULTANEOUS CARBON, NITROGEN
AND PHOSPHORUS REMOVAL

Grp./A.U. : 1724
Examiner :

Docket No.: 14624CIP

Honorable Assistant Commissioner of Patents
Alexandria, VA 22313-1450

Sir:

PTO CUSTOMER NO. 000293

INFORMATION DISCLOSURE STATEMENT

In accordance with 37 C.F.R., §§ 1.97-1.99, applicant submits the following information which may be of interest to the examiner in charge of the above referenced application for patent. Copies of the references listed on the attached Form PTO-1449, List of Prior Art Cited by Applicant, are attached.

Respectfully submitted,

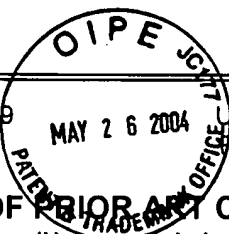
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Appl. No.

Sheet _____ of _____

FORM PTO-1449
(Rev. 7-80)U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

Atty. Docket No.

Serial No.

LIST OF PRIOR ART CITED BY APPLICANT

(Use several sheets if necessary)

APPLICANT

FILING DATE

GROUP

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AA						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
	AB							

OTHER PRIOR ART (including Author, Title, Date, Pertinent Pages, Etc.)

	AC	Kunii, D. And Levenspiel, O., Fluidization Engineering, Butterworth-Heinemann, Stoneham, MA, USA (1991)
	AD	Weber, W. J., Hopkins, C. B. And Bloom, R., Physical-chemical treatment of wastewater. J. Wat. Pollut. Control Fed., 42, 83-88 (1970).
	AE	Jeris, J.S. and Owens, R. W., Polit-scale high-rate biological denitrification, J. Wat. Pollut. Control Fed., 47, 2045-2057 (1975).
	AF	Hoyland, G. And Robinson, P.J., Aerobic treatment in OXITRON biological fluidized bed plant at Coleshill, Wat. Pollut. Control, 82, 479-493 (1983)
	AG	Cooper, P.F. and Williams, S. C., High-rate nitrification in a biological fluidized bed, Wat. Sci. Tech., 22, 431-442 (1990).
	AH	Semon, J., Sadick, T., Palumbo, D., Santoro, M and Keenan, P., Biological upflow fluidized bed denitrification reactor demonstration project - Stanford, CT, USA, Wat. Sci. Tech., 36, 139-146 (1997).
	AI	Zhu, J., Zheng, Y., Dimitre G. Karamanev and Amarjeet S.B., (Gas-) Liquid-solid circulating fluidized beds and their potential applications to bioreactor engineering, Can. J. Chem. Eng., 78, 82-94 (2000).
	AJ	Liang, W.G., Zhang, S.L., Zhu, J.X., Yu, Z. Q., Jin, Y. And Wang, Z.W., Flow characteristic of the liquid-solid circulating fluidized bed, Power Technol. 90, 95-102 (1997).
	AK	Zheng, Y., Zhu, J.Z., Bassi, A.S. and Margaritis, A., The axial hydrodynamic behaviour in a liquid-solid circulating fluidized bed. Can. J. Chem. Eng. 77, 284-290 (1999).

	AL	Zheng, Y., Zhu, J.-S., Marwaha, N.S. and Bassi, A.S., "Radical solids flow structure in a liquid-solids circulating fluidized bed", Chem. Eng. J., <u>88</u> (2), 141-150, 2002.
	AM	Liang, W.-G., Wu, Q.-W., Uy, Z.-Q., Jin, Y. And Bi, X-T., Flow regimes of the three-phase circulating fluidized bed, American Institute Chem. Eng. J., 41, 267-271 (1995).
	AN	Liang, W.-G., Yu, Z.-Q., Jin, Y., Wang, Z.-W., and Wu, Q.-W., Phase holdups in a gas-liquid-solid circulating fluidized bed, Chem. Eng. J. & Biochem. Eng. J., 58, 259-264 (1995).
	AO	Liang, W.-G., Wu, Q.-W., Uy, Z.-Q., Jin, Y. And Wang, Z.-W., Hydrodynamics of a gas-liquid-solid three phase circulating fluidized bed, Can. J. Chem. Eng., 73, 656-661 (1995).
	AP	Robinson JA, Trulear AG, and Characklis WG, Cellular Reproduction and Extracellular Polymer Formation by Pseudomonas aeruginosa in Continuous Cultures, Biotechnol. & Bioeng., XXV, 1409, (1984).
	AQ	Chian ES, and DeWalle FB, Treatment of High Strength Acidic Wastewater with a Completely Mixed Anaerobic Reactor, Water Research, 11, 295-304, (1977).
	AR	Rogalla F., Payradeau M., Bacquet G, Bourbigot, MM and Sibony J, Nitrification and Phosphorus Precipitation with Biological Aerated Fillers, Water Environ. Res., 62(2), 169-176, (1990).
	AS	Switzenabum MS, and Jewel WJ, Anaerobic attached-film expanded bed reactor treatment, J. Water Pollution Control Fed. 52, 1953-1965.
	AT	Casey TG, Wentzel MC, Ekama GA, Lowenthal RE, and Marais GVR, "A Hypothesis for the Causes and Control of Anoxic-Aerobic (AA) Filament Bulking in Nutrient Removal Activated Sludge Systems", Water Sci. Tech., 290 (7), 203-212, 1994.
	AU	Musvoto EV, Casey TG, Ekama GA, Wantzzel MG and Marais GVR, The Effect of Incomplete Dentrification on Anoxic-Aerobic (Low F/m) Filament Bulking in Nutrient Removal Activated Sludge Systems, Water Sci. Tech., 29(7), 295-299, 1994.
	AV	Van Dijk, J.C. and Braakensiek, H. Phosphate removal by crystallization in a fluidized bed. Wat. Sci. Tech., 17, 133-142 (1985).
	AW	Battistoni, P., Pavan, P., Cecchi, F. And Mata-Alvarez, J. Phosphate removal in real anaerobic supernatants: Modelling and performance of a fluidized bed reactor. Wat. Sci. Tech., 38, 275-283 (1998).
	AX	Zweger B, Arnold E and Wildever PA, Nutrient Balances for Combined Nitrification and Dentrification in Biofilters, Water Sci. Tech., 4(4), 91-95, 2000.
EXAMINER		DATE CONSIDERED
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 602; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		